

State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER A-13-43
Relating to Certification of New Motor Vehicle Heavy-Duty Engines

CATERPILLAR TRACTOR COMPANY

Pursuant to the authority vested in the Air Resources Board by Sections 43100, 43102, and 43103 of the Health and Safety Code; and

Pursuant to the authority vested in the undersigned by Sections 39515 and 39516 of the Health and Safety Code and Executive Order G-45-3;

IT IS ORDERED AND RESOLVED: That the following Caterpillar Tractor Company 1986 model-year heavy-duty diesel engines have shown compliance with the optional transient test procedure and standards and are certified for use in motor vehicles with a manufacturer's gross vehicle weight rating greater than 8500 pounds:

<u>Engine Family</u>	<u>Displacement Cubic Inches (Liters)</u>	<u>Exhaust Emission Control Systems (Special Features)</u>
GCTC636EPA6 Code B	636 (10.4)	Engine Modifications (Diesel Injection - Direct) (Turbocharger)
GCTO638FPA6	638 (10.5)	Engine Modifications (Aftercooler) (Diesel Injection - Prechamber) (Turbocharger)
GCTO893FPA6 Codes H & J	893 (14.6)	Engine Modifications (Aftercooler) (Diesel Injection - Direct) (Turbocharger)
GCTO893FPB7 Codes D & E	893 (14.6)	Engine Modifications (Aftercooler) (Diesel Injection - Direct) (Turbocharger)

Engine models and codes are listed on attachments.

The following are the certification emission values for these engine families:

<u>Engine Family</u>	<u>Hydrocarbons gm/bhp-hr</u>	<u>Carbon Monoxide gm/bhp-hr</u>	<u>Nitrogen Oxides gm/bhp-hr</u>
GCT0636EPA6 Code B	0.73	1.8	4.2
GCT0638FPA6	0.47	1.7	4.6
GCT0893FPA6 Codes H & J	0.40	2.4	5.1
GCT0893FPB7 Codes D & E	0.28	2.4	5.1

BE IT FURTHER RESOLVED: That the Executive Officer has been provided all material required to demonstrate certification compliance with the Board's emission control system warranty regulations including the aftercooler in the turbocharger system (Title 13, California Administrative Code, Section 2036).

Engines certified under this Executive Order must conform to all applicable California emission regulations.

The Bureau of Automotive Repair will be notified by copy of this order.

Executed at El Monte, California this 12th day of December, 1985.



K. D. Drachand, Chief
Mobile Source Division

MHDD

1986 AIR RESOURCES BOARD SUPPLEMENTAL DATA SHEET

Manufacturer Caterpillar Tractor Co. Executive Order No. A-13-43 Page 1A
 Engine Family GCT0636EPA6 Evaporative Family N/A
 Engine CID (Liters) 636 (10.4) V8

ABBREVIATIONS

Ignition System

CA -Centrifugal Advance
 EEC -Electronic Engine Control
 EI -Electronic Ignition
 ESAC-Electronic Spark Advance Control
 VA -Vacuum Advance
 VR -Vacuum Retard

Fuel System

CFI, CL, DID, DIP, EFI, MFI
 nV -nVenturi Carburetor
 VV -Variable Venturi

Exhaust Emissions Control System

AIP-Air Injection-Pump
 AIV-Air Injection-Valve
 CL -Closed Loop
 EGR-Exhaust Gas Recirculation
 EM -Engine Modification
 OC -Oxidation Catalyst System
 TR -Thermal Reactor
 TWC-Three Way Catalyst System

Special Features

CCV -Combustion Chamber Valve
 CFI -Central Fuel Injection
 DID -Diesel Injection-Direct
 DIP -Diesel Injection-Prechamber
 MFI -Mechanical Fuel Injection
 TC -Turbocharged
 AC -Aftercooled
 AA/AC-Air-to-Air and Aftercooled

Engine Family

GCT0636EPA6

Engine Model

3208 Code B

HHDD

1986 AIR RESOURCES BOARD SUPPLEMENTAL DATA SHEET

Manufacturer Caterpillar Tractor Co. Executive Order No. A-13-43 Page 18
 Engine Family GCT0638FPA6 Evaporative Family N/A
 Engine CID (Liters) 638 (10.5) I6

ABBREVIATIONS

Ignition System

CA -Centrifugal Advance
 EEC-Electronic Engine Control
 EI -Electronic Ignition
 ESAC-Electronic Spark Advance Control
 VA -Vacuum Advance
 VR -Vacuum Retard

Fuel System

CFI, CL, DID, DIP, EFI, MFI
 nV -nVenturi Carburetor
 VV -Variable Venturi

Exhaust Emissions Control System

AIP-Air Injection-Pump
 AIV-Air Injection-Valve
 CL -Closed Loop
 EGR-Exhaust Gas Recirculation
 EM -Engine Modification
 OC -Oxidation Catalyst System
 TR -Thermal Reactor
 TWC-Three Way Catalyst System

Special Features

CCV -Combustion Chamber Valve
 CFI -Central Fuel Injection
 DID -Diesel Injection-Direct
 DIP -Diesel Injection-Prechamber
 MFI -Mechanical Fuel Injection
 TC -Turbocharged
 AC -Aftercooled
 AA/AC-Air-to-Air and Aftercooled

Engine Family

GCT0638FPA6

Engine Model

3306

HHPD

1986 AIR RESOURCES BOARD SUPPLEMENTAL DATA SHEET

Manufacturer Caterpillar Tractor Co. Executive Order No. A-13-43 Page 10Engine Family GCT0893FPA6 Evaporative Family N/AEngine CID (Liters) 893 (14.6) I6

ABBREVIATIONS

Ignition System

CA -Centrifugal Advance
 EEC-Electronic Engine Control
 EI -Electronic Ignition
 ESAC-Electronic Spark Advance Control
 VA -Vacuum Advance
 VR -Vacuum Retard

Fuel System

CFI, CL, DID, DIP, EFI, MFI
 nV -nVenturi Carburetor
 VV -Variable Venturi

Exhaust Emissions Control System

AIP-Air Injection-Pump
 AIV-Air Injection-Valve
 CL -Closed Loop
 EGR-Exhaust Gas Recirculation
 EM -Engine Modification
 OC -Oxidation Catalyst System
 TR -Thermal Reactor
 TWC-Three Way Catalyst System

Special Features

CCV -Combustion Chamber Valve
 CFI -Central Fuel Injection
 DID -Diesel Injection-Direct
 DIP -Diesel Injection-Prechamber
 MFI -Mechanical Fuel Injection
 TC -Turbocharged
 AC -Aftercooled
 AA/AC-Air-to-Air and Aftercooled

Engine Family

GCT0893FPA6

Engine Model

3406B Code H
 3406B Code J

1986 AIR RESOURCES BOARD SUPPLEMENTAL DATA SHEET

Manufacturer Caterpillar Tractor Co. Executive Order No. A-13-43 Page 1D
 Engine Family GCT0893FPB7 Evaporative Family N/A
 Engine CID (Liters) 893 (14.6) 16

ABBREVIATIONS

Ignition System

CA -Centrifugal Advance
 EEC-Electronic Engine Control
 EI -Electronic Ignition
 ESAC-Electronic Spark Advance Control
 VA -Vacuum Advance
 VR -Vacuum Retard

Fuel System

CFI, CL, DID, DIP, EFI, MFI
 nV -nVenturi Carburetor
 VV -Variable Venturi

Exhaust Emissions Control System

AIP-Air Injection-Pump
 AIV-Air Injection-Valve
 CL -Closed Loop
 EGR-Exhaust Gas Recirculation
 EM -Engine Modification
 OC -Oxidation Catalyst System
 TR -Thermal Reactor
 TWC-Three Way Catalyst System

Special Features

CCV -Combustion Chamber Valve
 CFI -Central Fuel Injection
 DID -Diesel Injection-Direct
 DIP -Diesel Injection-Prechamber
 MFI -Mechanical Fuel Injection
 TC -Turbocharged
 AC -Aftercooled
 AA/AC-Air-to-Air and Aftercooled

Engine Family

GCT0893FPB7

Engine Model

3406B Code D
 3406B Code E

1986 AIR RESOURCES BOARD SUPPLEMENTAL DATA SHEET
HEAVY-DUTY DIESEL ENGINES

MHDD

Manufacturer CATERPILLAR TRACTOR CO. Page 2A

Engine Family GCT0636EPA6 (CODE B) CID(Liter)-Type 636 (10.4) V8

ECS (Special Features) EM, (TC, DID)

Engine Model	Fuel Injection Pump Manufacturer Part Number	Injector Manufacturer Part Number	Maximum Rated hp and rpm	Fuel Rate at Maximum hp mm ³ /stroke	Label Identification
3208 CODE B	CATERPILLAR 7W5479	CATERPILLAR 4W7016	590 @ 1400	92	LABEL INFORMATION WILL BE PROVIDED WHEN DESIGNED.
			225 @ 2600	79	
			550 @ 1400	87	
			210 @ 2600	74	
			560 @ 1400	89	
			200 @ 2200	76	
	<u>TURBOCHARGER</u> 7W2874 7W2875		500 @ 1400	79	
			175 @ 2200	69	

Date of Issue - 28 AUG 85

1986 AIR RESOURCES BOARD SUPPLEMENTAL DATA SHEET
HEAVY-DUTY DIESEL ENGINESHHDDManufacturer CATERPILLAR TRACTOR CO. Page 28Engine Family GCT0638FPA6 CID(Liter)-Type 638 (10.5) 16ECS (Special Features) EM, (TC, AC, DIP)

Engine Model	Fuel Injection Pump Manufacturer Part Number	Injector Manufacturer Part Number	Maximum Rated hp and rpm	Fuel Rate at Maximum hp mm ³ /stroke	Label Identification
3306	CATERPILLAR 7W0279	CATERPILLAR 9N2845	775 @ 1400	174	LABEL INFORMATION WILL BE PROVIDED WHEN DESIGNED.
			270 @ 2200	151	
			775 @ 1400	174	
			270 @ 2100	157	
			810 @ 1400	181	
			245 @ 2200	137	
	<u>TURBOCHARGER</u>		810 @ 1400	181	
			245 @ 2100	138	
	9N1289				
	9N1287				

Date of Issue - 28 AUG 85

1986 AIR RESOURCES BOARD SUPPLEMENTAL DATA SHEET
HEAVY-DUTY DIESEL ENGINES

HHDD

Manufacturer CATERPILLAR TRACTOR CO. Page 20

Engine Family GCT0893FPA6 CID(Liter)-Type 893(14.6) 16

ECS (Special Features) EM, (TC, AC, DID)

Engine Model	Fuel Injection Pump Manufacturer Part Number	Injector Manufacturer Part Number	Maximum Rated hp and rpm	Fuel Rate at Maximum hp mm ³ /stroke	Label Identification
3406B CODE H	CATERPILLAR 4W2551	CATERPILLAR 4W7018	1145 @ 1200	232	LABEL INFORMATION WILL BE PROVIDED WHEN DESIGNED.
			300 @ 2100	165	
			1145 @ 1200	232	
	<u>TURBOCHARGER</u> 4W4537 4W4538		300 @ 1800	186	
			1145 @ 1200	232	
			280 @ 1600	189	
3406B CODE J	CATERPILLAR 7L0007	CATERPILLAR 4W7018	1325 @ 1260	264	
			400 @ 2100	211	
			1345 @ 1260	279	
	<u>TURBOCHARGER</u> 4W5188 4W5189		400 @ 1800	238	
			1325 @ 1260	264	
			380 @ 1800	221	
			1325 @ 1260	264	
			360 @ 1800	210	
			1325 @ 1260	264	
			340 @ 1700	211	

Date of Issue - 28 AUG 85

**1986 AIR RESOURCES BOARD SUPPLEMENTAL DATA SHEET
HEAVY-DUTY DIESEL ENGINES**

H H D D

Manufacturer CATERPILLAR TRACTOR CO. Page 20
 Engine Family GCT0893FPB7 CID(Liter)-Type 893(14.6) I6
 ECS (Special Features) EM, (TC, AA/AC, DID)

Engine Model	Fuel Injection Pump Manufacturer Part Number	Injector Manufacturer Part Number	Maximum Rated hp and rpm	Fuel Rate at Maximum hp mm ³ /stroke	Label Identification
3406B CODE D	CATERPILLAR 4W2551	CATERPILLAR 4W7022	1150 @ 1000	227	LABEL INFORMATION WILL BE PROVIDED WHEN DESIGNED.
			310 @ 1800	173	
			1150 @ 1000	227	
			285 @ 1600	178	
3406B CODE E	CATERPILLAR 7L0007 <u>TURBOCHARGER</u> 7C0455	CATERPILLAR 4W7017			

Date of Issue - 28 AUG 85